

Remarks

Reconsideration and reversal of the rejections expressed in the Office Action of December 13, 2005 are respectfully contended in view of the following remarks and the application as amended. The present invention provides aqueous compositions for cleaning integrated circuit substrates. Specifically, in the cleaning of an integrated circuit substrate, disclosed is a method for removing the by-products of the high-k dielectric dry etch process from the integrated circuit substrate, the method including: contacting the integrated circuit substrate with an aqueous composition including an amount, effective for the purpose of a (a) hydrogen fluoride, followed by (b) a mixture of hydrogen peroxide with a compound selected from the group consisting of ammonium hydroxide, hydrochloric acid and sulfuric acid.

Claims 1-18 were rejected under 35 U.S.C. §112, second paragraph. Consistent with the examiner's remarks, the claims have been clarified to overcome this rejection.

Claims 1, 3, 4, 8-10, 12, 13, 17 and 18 were rejected under 35 U.S.C. §102(e) as anticipated by Park et al. (US 2003/0235947). Park et al. relates to a method for fabricating a capacitor in a semiconductor device; and, more particularly, to a method for fabricating a capacitor capable of stably forming a nitride layer on a lower electrode and obtaining improvements on stable capacitance and leakage current characteristics. The claims as clarified overcome this rejection. Note also that all discussions of temperature conditions in Park et al. specify a temperature of 200° C and higher. In contrast, the present invention as disclosed and claimed in certain claims specifies that cleaning comprises contacting the integrated circuit substrate with the aqueous cleaning composition at a temperature from about 15° C to about 90° C. Indeed, there is no teaching or suggestion in Park et al. that such lower temperature treatment ranges would be effective. Therefore, this rejection is overcome.

Claims 1-6, 8-15 and 17-18 were rejected under 35 U.S.C. §102(e) as being anticipated by Barnett et al. (US 2005/0070120), while claims 1, 2, 7-11 and 16-18 were rejected under 35 U.S.C. §102(e) as being anticipated by Brask et al. (US 2005/0048794). The claims as clarified overcome these rejections. Specifically, the rejection of the claims based on Barnett et al. is now moot based on the clarifications to the claims. As for the rejection based on Brask et al., note

that the temperature criterion as presently claimed in certain claims of Applicants' invention is neither taught nor suggested by that reference, i.e., there is no reasonable expectation, based on the teachings of the reference, that this aspect would produce an effective outcome. Therefore, these rejections are overcome as well.

For all of the above reasons, it is respectfully contended that the solicited claims define patentable subject matter. Reconsideration and reversal of the rejections expressed in the Office Action of December 13, 2005 are respectfully submitted. The Examiner is invited to call the undersigned if any questions arise during the course of reconsideration of this matter.

Respectfully submitted,

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Richard A. Paikoff
Richard A. Paikoff
Reg. No. 34,892
Duane Morris LLP
30 South 17th Street
Philadelphia, PA 19103-7396
tel. 215-979-1853

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